

Explorer Retreat

Tuesday September 30th

Herb - Peer Reviews

- Programs still struggling with peer reviews
- Review team (AO and inconsistencies)
- Implementing peer review and structure are to be examined in Phase B
- Was there an impact on the project as a result of the change?
 - Loss continuity, review board members seeing review for the 1st time, too many reviews as a result of inconsistencies with the reviews, delegating responsibility to PI
- Some reviews should be done in the program office
- Has the change always helped the project?
- Concern-review board does not report to project, project reports to review board
- Problems of reviews was adding to risks

Review teams questions of controlling the cost-Who is responsible?

- Dealing with less risk tolerance of NASA
- Increased lack of tolerance of risk has driven us
- PI class mission today different than it was 10 years ago
- RHESSI-exact situation happened, process made things more expensive, took longer
- Stability over the lifecycle, need a system that does not change over the lifecycle.
- Involve the PI and manager in specifics associated with the review process
- Should be an awareness that this turmoil will have impact on cost and schedule
- Want the review organization to be aware of the impact of change
- More participation early on from PI and program office
- Get all parties to agree on a set of reviews
- Try to establish something to keep the teams focused on real problems
- PI should be comfortable with membership of the review board
- Key Point- Review office does not scale review proportionality with the size of the missions, which create new issues
- CHIPS benefited from continuity of review team
- Lesson Learned- Chairman should control review team members keep focus
- Move to a regular raised cost cap instead of having it come out of science

Paul Hertz - Risk Evolution

- 1/3 improved in risk rating, 1/3 stayed the same, 1/3 got worse during Phase A
- Measuring risk?
 - Panel gets together
- Inconsistencies how GSFC measures risks
- Mission are getting through the review based on science appeal
- Increase funding for Phase A, is funding is a problem, and not the length of time
- Giving more funding in phase a allows them to address weaknesses
- Ramp-up is a real issues
- Need more time and more money for Phase A

- Pre-selection before going to HQ
- JPL does a pre-selection on each proposal
- JPL and Goddard rules are different
- How well is the process after down select
- How well does it pick up after risk reduction has been done
- Does adequate resources exist in the system? Yes
- Mission manager identified after down select
- Balance in the Explorers program needs to be established
- Need to be aggressive at some level to make a balance
- Don't want to select things that are low budget and boring, want to select exciting science
- Don't pay as much attention to the problems that are there

Ned Wright - Lessons learned from Wise

- New spacecraft design- RS 300
- NGSS selected again for Phase A study
- Select March 03 for extended Phase A study
 - Could coil off cryogen if WISE points at the earth, Like WIRE,
- SIRTf will be looking at the sky in the next year or so
- Need a good idea-ground base materials are much cheaper
- Wise top risks- detector arrays top risks, cost and schedule top risks
- WISE is in extended Phase A and can retire some risks
- How should the project and NASA go about working out disagreements on retiring some risks
- Extended Phase A, a nice thing to do
- The deliverable- IDR
- WISE is non competitive
- Process for WISE- use money in Phase A to reduce the high risk items
- What motivated HQ to let WISE continue on with an extended Phase A?
 - Got smarter
- Pick the best science make sure some are low risk
- Propose to Explorer office- Project manager only invites people he chooses to review the WISE concept in the next couple of months
- Several stages of costing
- Will compare notes on the other concepts that were proposed
- Monthly telecon to follow the progress of WISE
- Why WISE and nobody else?
 - Seemed liked a better solution than the solution given to AIM-
 - WISE perceived to be the best choice under the circumstances
- WISE selected based on selection criteria

Carlos Liceaga - TMC Review and Evaluation Process

- Key Point- make all proposals receive same evaluation
- Determine the level of risk accomplishing the scientific objectives of the mission as proposed on-time with cost

- Interface with spacecraft
- Considerations for mission investigations
 - Can this be developed within cost and schedule
 - How complex is the mission- reasonable design for this mission
 - Is there elements of good system engineering
 - Risk management, key area- important to identify risk, come up with plan for addressing the risks
 - Are funded schedule reserves as part of 20%

Step I TMC process

- How could this process be improved?
 - Instrument model be made available to the community would be helpful
 - Explorer program library- make sure data is consistent and up to date with the current AO's

Step II TMC process

- How could this process be improved?
 - 2 step process is the right process well structured
 - TMC 1st stage, TMCO 2nd stage

Mike McGrath - Lessons Learned from AIM

- Phase Funding and schedule- inadequate and long
- Take out the notion of innovative processing if you are not going to follow through with it
- Tune the CSR to be the guiding document for the project
- CCSRR great idea
- Selection of debrief provided a clear directive
- Different TRL definitions

Jim Burch - Lessons Learned from IMAGE

- Damper on IMAGE never worked on, found this out after launch got lucky.
- Instruments were new technology, spacecraft not much new technology

Key elements

- Stability was a major success in managing the phase C/D schedule
- Database was developed

Key Management Elements

- Helpful Bill Gibson spent a lot time with the instrument team
- Spent a lot of money to try to reduce mass
- All mission cost reserves were held by PI
- Could have had a better risk management process
- Run your observatory long enough
- Weaknesses
 - Risk management
 - Peer review process was too informal

Ken Johnston - Lessons Learned from FAME

- Complexity of the mission- complex optics went well in Phase A proposal

- Major milestones in Phase B
 - Define requirements
 - Delivery of CCD's
 - Optics
 - Bus
 - Problem encountered- kept putting off –put in a second order for CCDs
 - Personality problems with the team
 - Problem with the delivery of CCDs
 - Lockheed stationed a person at the vendor site and that did not work
 - Lockheed having problems with the vendor
 - Tried to reduce cost of instrument
- Lessons learned Phase A
 - Optimistic costs/scheduled phase A
 - Difficulty meeting original cost cap of 140M
 - Planned inadequate budget reserves
- Lessons learned Phase B
 - Communications & loss of key personnel
 - Simulations took too long to do
 - Kept going around and around on science requirements
- Recommendations
 - Allow adequate reserves
 - Need realistic estimate of cost and schedule

Dave Pierce - Lessons learned from CHIPS

- Delays resulting from launch
- Encountered schedule pressure-long term travel for team members
- Young professionals with the proper training can lead a successful mission
- Start-up company created missions of a fixed priced environment
- Team tested everything they could while awaiting at Berkley

Steve Brody - Lessons learned from Discovery

- A rush to meet milestones
- Cost schedule and technical content for the milestones/ or you do not satisfy the milestone
- Make sure you recognize the assumptions
- Don't go with what is in the advertising and marketing material in the elements
- Past goal performance is no guarantee of success
- Lessons learned
 - Make sure you have a clear understanding of who will take full responsibility
 - Problems with procedure met, need speeding up the process

Wednesday October 1, 2003

Beth Wahl-Independent Review Perspective

- IRT responsibility
 - Provide accurate to objective answers to NASA's questions
 - Help the project
 - A lot pushback from the institutions
- Review guidelines
 - Write recommendations versus actions (do not write a lot of recommendations-will address concerns if something is being taken care of)
 - Supply relevant lessons learned
 - Review board writes report, then goes to the project, that the project may reject

(Discussion-review board)

- Every review was handled differently
- Need a process to figure out if something really is an action
- Review should not be the source or insight of NASA
- Key aspect of review team chairman keep review board members inside their own area of expertise
- Does scope of review team stay in their area?
- Chairman needs to get in and to understand the program and guidelines and the objectives of the review
- After the review discuss everything, chairman reviews everything
- Intent is for the review team to work around the chairman
- One problem is continuous transitions
- Code 300 picks the review team chairman with the recommendation of the program office
- Who does the IRT work for?
- No standard way to operate a review
- How to make the review team help the project
- Responsibility of the program is to make sure mission is ready to go
- HQ responsibility is to make sure the science is worthwhile
- Inconsistencies were pointed out
- Review process had added some scope to the missions

Beth Wahl- Independent review perspective-cont'd

- Requirements
 - Look to see if there is a really clear focus on baseline project
- Technical approach
 - Balance that is critical to the Explorers program
 - Heritage, good amount, real
 - Scope
 - Complexity
 - Make most of the resources you have
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- Management
 - Key players a must- PI, lead engineer, PM, contractor team
 - Heritage that really matters is experience that team members have seen before

- Systems engineer-some of the important things
 - Requirements, concept of operations
 - Performance
- Schedule
 - Cost/schedule consistency
 - Detail

(Discussion)

- Independent reviews do not match GPG's
- Each review should have their own idea of what they are looking for
- When working for proposals, look for step 1- are the critical milestones laid out consistently
- Step 2- Does this PI understand what he or she is getting into when putting together the schedule
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Steve Thompson (Reducing Risk)

- Issues impacting project cost performance
 - Instrument/science
 - Spacecraft
 - Mission Ops/ground station
 - Underestimating instrument cost and schedule
 - Explorer competition (most exciting science)
 - Very little money in Phase A that really doesn't support the hardware development
 - Instrument design has to match spacecraft design at confirmation review

(Discussion)

- Are risks covered appropriately by the amount of reserves we are asking for?
 - Levels of reserves we are talking about are adequate and sufficient for the spacecraft
- Fixed price contracts proved successfully for Swift
- Technology continues to be fragile
- Additional reserves need to be carried on in some items
- International agreement and ITAR
- Science versus defense services
- Squeezing last years MIDEX on a SMEX
- Margins cut severely, small margins equals higher risk
- Money that has been allocated on past missions was consistent with what was required
- Cost driven by tasks, not by size of system
- Recommendations
 - Advanced instrument offerings indicate need for early start of instrument development, decoupled from spacecraft development
 - Look at the coupling with spacecraft cost
 - Take time to define instrument and interface
 - Should be more focus on the credibility of schedule
 - Assign ITAR advisor to winning missions for Phase A
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David Gilman-Mission Impediments

- Study of mission impediments
- Studying weekly and monthly reports and understand their limitations
- Surprising finding from weekly reports and a hypothesis
- What can prevent you from paying attention to detail
 - No leader, inexperience, clutter
 - Not enough staff, technical complexity
 - Complexity of failed missions high in all categories

International Partners cost and benefits

- Issues with foreign partners
 - Foreign partners and program formulation
 - Foreign partners in study and implementation phases
 - Foreign partners and termination
 - ITAR situation is there any pushback?
 - Code I feels LOA have to be worked for every kind of agreement
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John Schafer- Access to space hopes and reality

- Flight planning board review the requirements
- Explorers typically CAT #2
- Separate review team to look at mission
- Get vehicles through commercial launch services
- Customer considerations
 - Sometimes fund secondary missions
- Domestic market
 - Current commercial market trend is for larger spacecraft and vehicles
- Space access challenges
 - Viability of domestic small and medium ELV capability beyond 2010 continues to be a challenge
 - Contracts based on mix of firm and optional services
 - NASA launch services manifested- 10 identified
 - Status on SCB
 - A Study was done looking to go forward 18-24 month device cycle capability 2005 early 2006
 - Mentor and Peacekeeper- looking to get primary payload capability considering secondary payload capability
 - Mentor could make a tremendous launch vehicle for Explorer

Warren-Risk Management

- Risk equals probability and impact
- Proactive risk management
- Reactive risk management
- Recommendations
 - Start early
 - Get entire team involved
 - Communicate
- PM is responsible to make sure everyone is doing risk management
- Present risk data in graph chart instead of a table, easier to make a decision on

- Can manage risk on simple things
- When things get complex need to be more systematic
- Risk management needs to have a point of discussion
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James Fanson-Lessons learned GALEX, Phase E

- Overlaying GSFC and JPL
- Contract created conflict
- Have a solid mission system concept with adequate margin by CSR.
- Orbital shared operations proved elusive
- Lesson learned
 - Be prepared for economic downturns